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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/889,625	07/19/2001	Kiyoshi Iwanaga	Q65479	6942

7590 06/04/2003

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EXAMINER

NGUYEN, NGOC YEN M

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 06/04/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/889,625

Applicant(s)

IWANAGA ET AL.

Examiner

Ngoc-Yen M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 0,861,803.

EP '803 discloses a process for producing chlorine from hydrogen chloride in a sequence of steps using a combination of fixed bed catalytic reactors operating in two distinct temperature ranges. As shown in the Figure 1, a group of four reactors arranged to permit each of the four principal steps of the process to be carried out simultaneously. Accordingly, reactors 10, 11, 12, and 13 each contain a fixed bed of Deacon reaction catalyst. Also, each of these reactors have indirect heat exchange means such as heating or cooling coils 14 and 16 associated with reactors 11 and 13, respectively. The corresponding coils for reactors 10 and 12 are not shown (note page 5, lines 44-46). The reactors 11-13 are clearly shown in Figure 1 as being connected in series.

The catalyst material in EP '803 can be any catalyst operative in the Deacon process. In general, such catalysts are well known and are described in the technical literature and issued patents. Often alkali metal chlorides, such as sodium or potassium chloride, are included, as are salts of rare earth metals. Suitable supports include well known carriers such as alumina, silica, silica-alumina and various known zeolite

molecular sieves. These supports are considered inert, but this does not preclude the support material from having an enhancing effect upon the activity of the catalytic compounds (note page 5, lines 22-32). When more than one compound are used as the catalysts or when the support has enhancing effect, the catalysts in EP '803 are considered as having "at least two kinds".

The process of EP '803 anticipates the claimed process.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP '803.

EP '803 discloses a process as mentioned in the above rejection.

EP '803 discloses that the process has four steps:

In step (a): an HCl-containing stream is directed into a defined volume in contact with a fixed bed of Deacon reaction catalyst containing supported metal oxide species.

The temperature of step (a) is in the range of 180 to 290°C, and the reaction proceeds to convert at least a portion of said metal oxide to metal chloride species, forming water in the process.

In step (b): the HCl-containing stream is redirected to another catalytic fixed bed volume for repetition of step (a) while heating the first bed of catalyst having just completed step (a) to a temperature in the range of 300 to 400°C for performance of step (c) which, under certain conditions, can be combined with step (b).

In step (c): the heated catalyst of step (b) is contacted with an oxygen-containing stream at a temperature in the range of 300-400°C, to form metal oxide species in the heated catalyst suitable for use in a repetition of step (a). This reaction produces chlorine and chlorine-containing gas is withdrawn in an effluent stream.

In the final step (d): the oxygen-containing stream of step (c) is redirected to another volume for repetition of step (c) and the bed of catalyst having just completed step (c) is cooled to a temperature in the range of 180 to 290°C, thereby separating the catalyst bed for repeating step (a) (note page 3, lines 12-34).


EP '803 further discloses that by using fixed bed catalysts instead of fluidized beds, the disadvantages of the fluidized beds are overcome while retaining the advantages and flexibility of carrying out the reaction in two process steps under the optimum conditions for each step. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to optimize the volume% of the first catalyst bed, the thermal conductivity, the activities in the reaction zones of the process of EP '803 in order to maintain the desired temperatures and to obtain the best results.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (703) 308-2536. The examiner is currently on Part time schedule.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (703) 308-3837. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
Ngoc-Yen M. Nguyen  
Primary Examiner  
Art Unit 1754

nmn  
June 2, 2003